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April 4, 1945

REPORT NO.
KZ 2346

Dr. M. Benedict

A. M. Squires/L. Henkin

Carbide and Carbon Chemicals Corporation Operating Contractor for the U.S. Atomic Energy Commission.

EFFECT OF S-50 ON K-25 OUTPUT

This note compares the output of the K-25 Plant when fed with normal feed and when fed with product and waste from S-50 together with normal feed. It is assumed that S-50 would furnish K-25 with 271 lbs./day of G-616 at 0.9% and 1,167 lbs./day at 0.666%. The remainder of the feed to K-25 would be normal 0.71% material. The 0.9% feed would be introduced into K-25 at the stage which handles 0.9% material. The 0.666% feed would be introduced together with normal feed at the normal feed point. (The advantage to be gained by segregating this material and feeding it at the correct point in the stripper is very slight.)

Three cases are considered: Case I and II producing 1.1% material, and Case V producing 20% material together with a side-stream of 140 kgm. T at 1.1%. The effect of S-50 feed is found to be small in all cases studied, the increase in product rate never exceeding 6%.

The following table gives comparisons of K-25 output with and without S-50 feed. In all cases, K-25 is assumed to operate with fresh barriers at minimum pressure levels.

CASE I

Total Feed Rate, lbs. 616/day	Product Rate at 1.1%, lbs. 616/day — Without S-50 Feed	With S-50 Feed
2100	570	590
4200	820	845
6300	920	950

CASE II

Total Feed Rate, lbs. 616/day	Without S-50 Feed	With S-50 Feed
2100	845	890
4200	1220	1280
6300	1390	1450

CASE V. Producing 20% Material Together with 140 kgm. T/day as a Sidestream at 1.1%:

Total Feed Rate, lbs. 616/day	Product Rate at 20%, lbs. 616/day — Without S-50 Feed	With S-50 Feed	
2100 (Alternate Feed Point)	12.2	12.55	.35
4200 (Normal Feed Point)	16.55	17.0	.45
5250 (Normal Feed Point)	17.05	17.45	.4

A. M. Squires

L. Henkin

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[redacted]

This document has been approved for release to the public by:
Arvin S. Quist 12/18/95
Technical Information Officer Date
Oak Ridge K-25 Site

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